

WHAT IS CLAIMED IS

1. An electronic ballast system for emergency lighting applications, comprising:

an input power source for providing the electronic ballast system  
5 with power required;

a storage voltage source connected to the input power source in series so as to store the power and having one end thereof connected to ground;

10 a first capacitor connected to a second capacitor in series, wherein one end of the first capacitor is connected to the input power source and one end of the second capacitor is grounded;

a plural regular lamp set connected to the first capacitor with the second capacitor for regular lighting;

a regular/emergency lamp set connected to the input power source and the storage voltage source for regular or emergency lighting;

15 a first switch coupled with the plural regular lamp set and the other end connected to ground;

a second switch with one end connected to ground;

a transformer having a primary coil coupled to the regular/emergency lamp set, and a secondary coil coupled to the second switch, 20 wherein one end of the primary coil is connected to the secondary coil;

a third switch with one end coupled to the regular/emergency lamp set and the other end coupled to the input power source;

a forward diode installed for rectifying with one end coupled to the input power source and the other end thereof coupled to the plural regular lamp set with the first switch; and

a backward diode for rectifying function with one end coupled to the first switch and the other end coupled to the third switch.

2. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein the first switch serves as one switching element of a regular ballast for the plural regular lamp set.

3. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein the second switch possesses a regular/emergency ballast switch function and a bi-directional flyback converter switch function simultaneously.

4. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein the third switch possesses an integrated switching function of a regular/emergency ballast, a bi-directional flyback converter and a regular ballast at the same time.

5. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein the transformer serves as the energy transmission of a bi-directional flyback converter.

6. The electronic ballast system for emergency lighting applications as

recited in claim 1, a flyback charger is formed by the third switch with the transformer when the input power source normally works.

7. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein a regular half-bridge series resonant parallel loaded 5 electronic ballast is formed by the first switch with the third switch coupled to the plural regular lamp set when the input power supply normally works.

8. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein a regular half-bridge series resonant parallel loaded 10 electronic ballast is formed by the second switch with the third switch coupled to the regular/emergency lamp set when the input power supply normally works.

9. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein the first switch is disabled instantly and automatically due to the connection with the forward diode and the backward 15 diode when the input power source fails to work normally.

10. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein a flyback discharger is formed due to the connection of the storage voltage source with the transformer and the second switch when the input power source fails to work normally.

20 11. The electronic ballast system for emergency lighting applications as recited in claim 1, wherein an emergency half-bridge series resonant parallel loaded electronic ballast is formed due to the connection of the second switch with the third switch coupled to the regular/emergency lamp set when the input

power source fails to work normally, and the power source of the emergency electronic ballast is from the storage voltage source.

12. An electronic ballast system for emergency lighting applications, comprising:

5                   an utility power source rectified by a bridge rectifier to output a DC input power source to provide the electronic ballast system with power required;

                  a storage voltage source connected to the input power source in series so as to store the power and having one end thereof grounded;

10                  a first capacitor connected to a second capacitor in series, wherein one end of the first capacitor is connected to the input power source and one end of the second capacitor is grounded; a plural regular lamp set connected to the first capacitor and the second capacitor for regular lighting;

15                  a regular/emergency lamp set connected to the input power source and the storage voltage source for regular or emergency lighting;

                  a first switch having one end coupled with the plural regular lamp set and the other end grounded;

                  a second switch with one end connected to ground;

20                  a transformer having a primary coil coupled to the regular/emergency lamp set and a secondary coil coupled to the second switch, wherein one end of the primary coil is connected to the secondary coil;

a third switch with one end coupled to the regular/emergency lamp set and the other end coupled to the input power source;

a forward diode installed for rectifying with one end coupled to the input power source and the other end coupled to the plural regular lamp set and  
5 the first switch;

a backward diode for rectifying with one end coupled to the first switch and the other end coupled to the third switch; and

a detector coupled to the utility power source for outputting a detective voltage so as to decide the plural regular lamp set or the  
10 regular/emergency lamp set is lighting or not.

13. The electronic ballast system for emergency lighting applications as recited in claim 12, wherein the detector includes:

a lamp switch coupled to one line of the utility power source; and

an output capacitor with one end coupled to the lamp switch via a  
15 diode and the other end coupled to the utility power source via another diode, wherein the voltage of the output capacitor is a detective voltage.

14. The electronic ballast system for emergency lighting applications as recited in claim 13, wherein if the utility power source fails to normally provide the power, the regular/emergency lamp set is lighting by the storage voltage  
20 source and the plural regular lamp set is lighting off;

if the utility power source is normally on and the lamp switch is

turned off, the regular/emergency lamp set and the plural regular lamp set are lighting off; and

if the utility power source is normally on and the lamp switch is turned on, the regular/emergency lamp set and the plural regular lamp set are

5 lighting on.